

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to Figure 3. This sheet replaces the original sheet. In Figure 3, the caption "Prior Art" was added. No new matter was added with the amendment.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS

Claims 1-37 are pending in this application.

Applicants appreciate the Examiner's indication that claims 33 and 37 would be allowable if rewritten in independent form, and that claims 16 and 20 would be allowable if amended to correct informalities and rewritten in independent form. Accordingly, applicants have rewritten claim 16 in independent form. Claim 16 is now allowable.

Regarding the Claim for Priority, applicants respectfully point out that the present application is a National Phase application of International PCT Application PCT/EP00/04815, filed on May 26, 2000, claiming priority to the German patent application 199 38 921.7. Accordingly, applicants are not required to file a certified copy of that German application.

In the Office Action, the drawings were objected to because Fig. 3 was not labeled as "Prior Art". Applicants have amended the drawings to include that caption in Fig. 3.

Claims 1-20 were objected to under 35 U.S.C. 112 as being indefinite. Applicants have amended independent claim 1 to make it definite. Claims 2-20 depend from claim 1, and thus are also submitted to be definite. As described on pages 10-11 of the specification, with reference to Figs. 5-6, the sealing tip of the valve rod 16 which contacts the actuator sealing surface 16a can have various different shapes. One of these shapes may be the sphere 30, which thus may be considered a part of the valve rod 16 when determining the claimed extra length.

In the Office Action, claims 1-15, 17-19, 21-32 and 35-36 were rejected under 35 U.S.C. 102(b) as being anticipated by Baumgartner et al. (U.S. Patent 6,161,813). Applicants have amended claims 1 and 21 to more clearly define the invention. Support for the amendments is provided in the specification, for example on pages 3-4 and 8.

Baumgartner et al. describes a control valve that has an anchor plate 28 that is displaceable on the anchor bolt 27, against the force of a spring. After the anchor bolt 27 has made contact with the valve seat, the anchor plate continues to move against the force of the spring until reaching a stop, so that the mass which is effectively decelerated in the valve seat is reduced by the mass of the anchor plate. In this manner, the elastic deformation of the valve seat, that produces an undesirable rebounding of the anchor bolt, is reduced. The wear of the sealing seat is thus reduced, and only the mass forces originating from the mass of the valve bolt have to be absorbed in the valve seat. According to Baumgartner et al., the forces acting on the sealing seat continue to be dependent on the dynamic processes of the valve, so that a defined desired sealing force cannot be adjusted.

In contrast, according to the claimed invention, wear due to the excessive mass forces is avoided. The sealing force acting on the sealing surface is limited to a predetermined, fixed value that is independent from the dynamic mass forces. To achieve this result, the valve actuating element acts as an elastic spring, due to its thin, elongated design, wherein its elastic deformation is

limited by a stop that is separate from the valve seat. Because of the separate stop, the compression of the valve actuating element is limited, and a sealing force corresponding to the compression of the valve actuating element takes place. This force is selected to guarantee a desired adequate sealing function. According to the invention, the mass forces that exceed the forces necessary to obtain the sealing function do not produce an additional compression of the valve actuating element, but instead are absorbed by the separate stop, so that the damping function is carried out by the valve actuator at the valve actuator stop surface.

The cited reference does not describe or suggest an injector with a valve rod of a valve actuator which, during a closing movement of the valve actuator, has an excess length that is taken up by an elastic deformation of the valve rod, the excess length being selected to provide a desired sealing function at the actuator sealing surface and damping function at the actuator stop surface, as recited in claim 1. Accordingly, applicants respectfully submit that claim 1 is allowable.

Claim 21 recites that the valve rod, in the closed position, is compressed to a length that is shorter by an excess length than a length of the valve rod when the valve actuator is at the opening position, wherein the excess length is selected to provide a desired sealing function at the actuator sealing surface and damping function at the actuator stop surface. For the same reasons as claim 1, claim 21 is also respectfully submitted to be allowable. Claims 2-20 and 22-37 depend from allowable claims, and at least for that reason are respectfully submitted to be allowable.

If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 010816.50684).

Respectfully submitted,

September 8, 2008



Robert L. Grabarek, Jr.
Registration No. 40,625

Paolo M. Trevisan
Registration No. 45,164

CROWELL & MORING, LLP
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
RLG/PMT:acm
DN#6149204